What is claimed is:

1. A method of electron-microscopic observation of a semiconductor arrangement, comprising:

providing an electron microscopy optics for imaging secondary electrons emanating from the semiconductor arrangement within an extended object field on a position-sensitive detector,

providing an illumination device for emitting a primary energy beam,

directing the primary energy beam to at least the object field for releasing secondary electrons from the semiconductor arrangement,

wherein the semiconductor arrangement comprises a region with an upper surface provided by a first material and a recess which has an aspect ratio higher than 1.5 and which is surrounded by the upper surface and has a bottom provided by a second material.

2. The method according to claim 1, wherein the aspect ratio is higher than 4.

3. The method according to claim 1, wherein the aspect ratio is higher than 10.

4. The method according to claim 1, wherein at least one of an energy and an intensity of the primary energy beam is adjusted such that the upper surface is positively charged relative to the bottom.

5. The method according to claim 1, wherein the illumination device comprises an electron source and the primary energy beam comprises a primary electron beam with an adjustable kinetic energy of electrons of the primary electron beam.

6. The method according to claim 1, wherein the illumination device comprises a photon source and the primary energy beam comprises a photon beam.

7. The method according to claim 6, wherein the photon beam impinges substantially orthogonally on the upper surface of the semiconductor arrangement.

8. The method according to claim 6, wherein the photon beam impinges on the upper surface of the semiconductor arrangement at an angle between 10° to 80°.

9. The method according to claim 1, wherein the electron microscopy optics is provided for displacing the object field which is imaged on the detector relative to the detector in a plane of the upper surface.

10. The method according to claim 1, wherein the electron microscopy optics comprises an image-preserving energy filter which prevents secondary electrons having a kinetic energy which is lower than an adjustable first threshold energy from being imaged onto the detector.

11. The method according to claim 10, wherein the first threshold energy is adjusted such that positively charged electrons released from the upper surface are substantially not imaged on the detector .

12. The method according to claim 11, wherein the energy filter further prevents secondary electrons having a kinetic energy which is higher than an adjustable second threshold energy from being imaged onto the detector.

13. A method of electron-microscopic observation of a semiconductor arrangement, comprising:

providing an electron microscopy optics for imaging secondary electrons emanating from the semiconductor arrangement within an extended object field on a position-sensitive detector,

providing an illumination device for emitting a primary energy beam,

directing the primary energy beam to at least the object field for releasing secondary electrons from the semiconductor arrangement,

wherein the semiconductor arrangement comprises a region with an upper surface provided by a first material and a recess which is surrounded by the upper surface and has a bottom provided by a second material,

wherein the illumination device comprises an electron source and the primary energy beam comprises a primary electron beam with an adjustable kinetic energy of electrons of the primary electron beam,

wherein, dependent upon the energy of the electrons of the primary electron beam, the first material has a secondary electron yield characteristic with a maximum (E_m) and a first neutral point (E_1) below the maximum (E_m) and a second neutral point (E_2) above the maximum (E_m) and

wherein the kinetic energy of the electrons of the primary electron beam is adjusted to an energy value (E_P) which is higher than an energy of the first neutral point (E_1) of the secondary electron yield characteristic of the first material.

14. The method according to claim 13, wherein at least the first material is substantially electrically non-conductive.

15. The method according to claim 13, wherein the first material is substantially electrically non-conductive and the second material is substantially electrically conductive.

16. The method according to claim 13, wherein the second material, dependent upon the energy of the electrons of the primary electron beam, has a secondary electron yield characteristic with a maximum (E_m^a) and a first neutral point (E_1^a) below the maximum (E_m^a) and a second neutral point (E_2^a) above the first maximum (E_m^a), and wherein the kinetic energy of the electrons of the primary electron beam is adjusted to an energy value (E_P) of an energy range in which the secondary electron yield characteristic of the first material is higher than the secondary electron yield characteristic of the second material.

17. The method according to claim 16, wherein the first and second materials are substantially electrically non-conductive.

18. An electron microscopy system comprising:

an electron microscopy optics for imaging secondary electrons which emanate within an extended object field from an object on a position-sensitive detector,

an illumination device for directing a primary energy beam to at least the object field for releasing there secondary electrons therefrom,

wherein the electron microscopy optics comprises an image-preserving energy filter having an adjustable energy window such that secondary electrons whose kinetic energies are outside of the energy window (E_{min}, E_{max}) are substantially not imaged on the position sensitive detector, and

wherein the electron microscopy system further comprises a controller for adjusting the energy window of the energy filter, and wherein the controller comprises a memory for storing at least one setting for the energy window,

wherein the illumination device produces as primary energy beam an electron beam with an adjustable kinetic energy, and wherein the memory is provided for storing a setting of the kinetic energy of the electron beam associated with the setting of the energy window.

19. The electron microscopy system according to claim 18, wherein the electron microscopy optics comprises an aperture electrode for providing an adjustable extraction field for secondary electrons between the object and the aperture electrode, and wherein a storage of the energy window setting comprises a storage of an extraction field setting.

20. The electron microscopy system, comprising:

an electron microscopy optics for imaging secondary electrons which emanate within an extended object field from a region around an object plane of the microscopy optics on a position-sensitive detector,

an illumination device for directing a primary energy beam to at least the object field for releasing there secondary electrons from the object,

wherein the electron microscopy optics comprises an image-preserving energy filter having an adjustable energy window such that secondary electrons whose kinetic energies are outside of the energy window (E_{min}, E_{max}) are substantially not imaged on the position sensitive detector, and

wherein the electron microscopy system further comprises a controller for adjusting the energy window of the energy filter and wherein the controller comprises a memory for storing at least one setting for the energy window,

and wherein the memory is further provided for storing a focus setting of the electron microscopy optics associated with the setting of the energy window.

21. The electron microscopy system according to claim 20, wherein the electron microscopy optics comprises an aperture electrode for providing an adjustable extraction field for secondary electrons between the object and the aperture electrode, and wherein a storage of the energy window setting comprises a storage of an extraction field setting.